Claims

1. A process for production of paper from an aqueous suspension containing cellulosic fibres, and optionally fillers, which comprises adding to the suspension a cationised polysaccharide product comprising a polysaccharide having

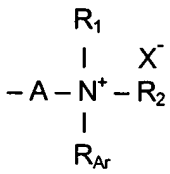
(i) at least one first substituent having an aromatic group; and

(ii) at least one second substituent having no aromatic group,

forming and draining the suspension on a wire.

2. The process of claim 1, wherein the polysaccharide has a cationic charge density within the range of from 0.05 to 4.0 meq/g.

3. The process of claim 1, wherein the first substituent comprises the following general structural formula (I):

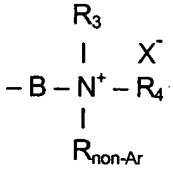


(I)

wherein A is a group attaching N to the polysaccharide, R_1 and R_2 are individually H or alkyl having from 1 to 3 carbon atoms, R_{Ar} is an aromatic group containing 1 to 12 carbon atoms, or, alternatively, R_1, R_2, and R_{Ar} together with N form an aromatic group, and X^- is a counterion.

4. The process of claim 1, wherein the first substituent comprises a benzyl group.

5. The process of claim 1, wherein the second substituent comprises the general structural formula (II):



(I)

wherein B is a group attaching N to the polysaccharide, R_3 and R_4 are individually H or alkyl having from 1 to 3 carbon atoms; $R_{non\text{-}Ar}$ is a non-aromatic group containing 1 to 4 carbon atoms; and X^- is a counterion.

6. The process of claim 1, wherein first substituent comprises $-CH_2-CH(OH)-CH_2-N^+((CH_3)_2)CH_2C_6H_5$ Cl^- and the second substituent comprises $-CH_2-CH(OH)-CH_2-N^+((CH_3)_3)$ Cl^-.

7. The process of claim 1, wherein the polysaccharide comprises cationised starch, cationised guar gum, or a mixture thereof.

8. The process of claim 1, wherein it further comprises adding at least one anionic material to the suspension.

9. The process of claim 8, wherein the anionic material comprises silica-based particles or clay of smectite type.

10. The process of claim 9, wherein the anionic material comprises silica-based particles having a specific surface area of at least 100 m^2/g that are present in a sol having an S value in the range of from 5 to 50%.

11. The process of claim 1, wherein the anionic material comprises an anionic organic step-growth polymer.

12. The process of claim 11, wherein the anionic material comprises an anionic organic step-growth polymer which is a naphthalene sulphonate. .

13. The process of claim 1, wherein the process further comprising recirculating white water and optionally introducing fresh water to form a suspension containing cellulosic fibres, and optional fillers, to be dewatered, the amount of fresh water introduced being less than 30 tonnes per tonne of dry paper produced.

14. The process of claim 1, wherein it further comprises adding to the suspension a cationic polyacrylamide.

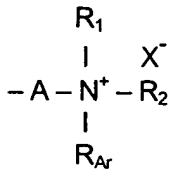
15. The process of claim 1, wherein it further comprises adding to the suspension a low molecular weight cationic synthetic organic polymer.

16. A process for production of paper from an aqueous suspension containing cellulosic fibres, and optionally fillers, which comprises adding to the suspension a cationised polysaccharide product comprising

(i) a polysaccharide having at least one first substituent having an aromatic group; and

(ii) a polysaccharide having at least one second substituent having no aromatic group, forming and draining the suspension on a wire.

17. The process of claim 16, wherein the first substituent comprises the following general structural formula (I):



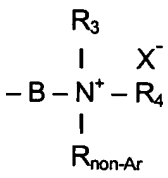
(I)

wherein A is a group attaching N to the polysaccharide, R_1 and R_2 are individually H or alkyl having from 1 to 3 carbon atoms, R_{Ar} is an aromatic group containing 1 to 12 carbon

atoms, or, alternatively, R_1, R_2, and R_{Ar} together with N form an aromatic group, and X^- is a counterion.

18. The process of claim 16, wherein the first substituent comprises a benzyl group.

19. The process of claim 16, wherein the second substituent comprises the general structural formula (II):



(I)

wherein B is a group attaching N to the polysaccharide, R_3 and R_4 are individually H or alkyl having from 1 to 3 carbon atoms; $R_{non\text{-}Ar}$ is a non-aromatic group containing 1 to 4 carbon atoms; and X^- is a counterion.

20. The process of claim 16, wherein first substituent comprises $-CH_2-CH(OH)-CH_2-N^+((CH_3)_2)CH_2C_6H_5$ Cl^- and the second substituent comprises $-CH_2-CH(OH)-CH_2-N^+((CH_3)_3)$ Cl^-.

21. The process of claim 16, wherein the polysaccharide comprises cationised starch, cationised guar gum, or a mixture thereof.

22. The process of claim 16, wherein it further comprises adding at least one anionic material to the suspension.

23. The process of claim 22, wherein the anionic material comprises silica-based particles or clay of smectite type.

24. The process of claim 23, wherein the anionic material comprises silica-based particles having a specific surface area of at least 100 m^2/g that are present in a sol having an S value in the range of from 5 to 50%.

25. The process of claim 16, wherein the anionic material comprises an anionic organic step-growth polymer.

26. The process of claim 25, wherein the anionic material comprises an anionic organic step-growth polymer which is a naphthalene sulphonate. .

27. The process of claim 16, wherein the polysaccharides are separately added to the suspension.

28. The process of claim 16, wherein the polysaccharides are added simultaneously to the suspension.

29. The process of claim 16, wherein it further comprises adding to the suspension a cationic polyacrylamide.

30. The process of claim 16, wherein it further comprises adding to the suspension a low molecular weight cationic synthetic organic polymer.